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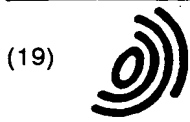
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(12) **EUROPEAN PATENT APPLICATION**

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(54) **Electronic device with trackball user input**

(57) A portable radio telephone comprising a housing, a transceiver located in the housing, a controller connected to the transceiver, a display connected to the controller, and a user input device connected to the controller. The user input device comprises a trackball movably connected to the housing and at least one trackball

rotational position sensor connected to the controller for sensing rotational movement of the trackball. The sensor includes a roller which rides against an exterior surface of the trackball. The user input device is configured to provide biased stepwise movements of the roller as the trackball is rotated by a user.

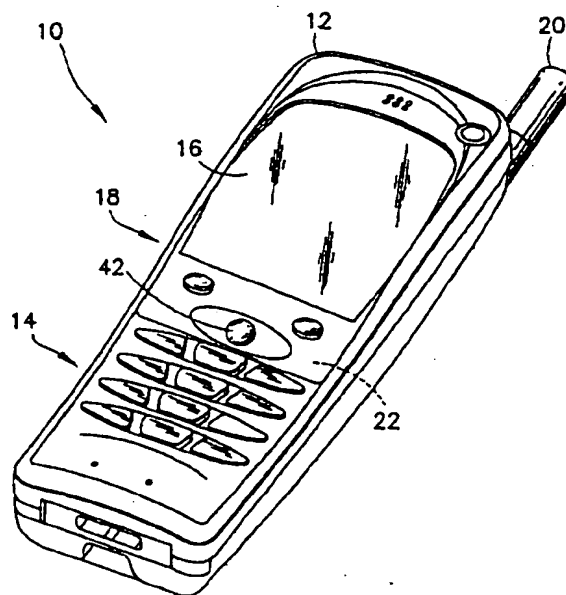


FIG. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 6452

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 03, 31 March 1999 (1999-03-31) & JP 10 320115 A (OMRON CORP), 4 December 1998 (1998-12-04) * abstract *	1-3,22, 26	G06K11/18 H04M1/247
Y	---	11-13,19	
Y	WO 97 29582 A (SPRINT TELECOMMUNICATIONS VENT) 14 August 1997 (1997-08-14) * page 1, line 15 - line 20; claims 7,16; figures 1,3 *	11-13,19	
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 02, 30 January 1998 (1998-01-30) & JP 09 282088 A (SONY CORP), 31 October 1997 (1997-10-31) * abstract *	1-3,22, 26	
Y	---	11-13,19	
Y	WO 98 48548 A (NOKIA OYJ ;TAPPURA KIRSI (FI); KIMMEL JYRKI (FI); NIEMINEN HANNU () 29 October 1998 (1998-10-29) * page 5, line 10 - line 22; claim 5; figures 3,4,9,10 *	11-13,19	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G06K H04M
E	WO 01 59556 A (NAKASE MASAKI ;YOKOJI SHIGERU (JP); FUKUMURA TOYOSHI (JP); MATSUSH) 16 August 2001 (2001-08-16) * abstract; figures *	1-4, 8-14, 18-22, 24-26	
A	WO 97 25657 A (LEX COMPUTER & MANAGEMENT) 17 July 1997 (1997-07-17) * figures 7-10 *	4,14,25	

		-/--	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 21 January 2002	Examiner Durand, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background C : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EP-C FORM 1503 23.82 (P4-C01)



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Application Number
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	WO 99 19861 A (CHANG TING HU;BIDIVILLE MARC A ; MERMINOD ANTOINE A (CH); LOGITECH) 22 April 1999 (1999-04-22) * page 2, line 33 - page 3, line 4; claims 2,3; figures 2,3 *	4,14,25	
X	--- "MOUSE WITH GEODESIC BALL" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 303, 1 July 1989 (1989-07-01), page 519 XP000045833 ISSN: 0374-4353 * the whole document *	1-3,5,6, 22,23	
Y	---	11,15, 16,20	
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) & JP 11 032113 A (KOKUSAI ELECTRIC CO LTD), 2 February 1999 (1999-02-02) * abstract *	21	
Y	---	11,15, 16,20	
A	---	10	
X	DE 197 22 505 A (BOSCH GMBH ROBERT) 3 December 1998 (1998-12-03) * column 4, line 14 - line 31; claims; figure 1 *	1,5,10, 21-23	
Y	---	11,15,20	
X	GB 2 318 944 A (LUCENT TECHNOLOGIES INC) 6 May 1998 (1998-05-06) * page 4, line 5 - line 9; claims 5,6; figure 4 *	21	
Y	---	11,15,20	
A	---	10	
-/--			
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 21 January 2002	Examiner Durand, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background C : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 6452

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-3, 9, 11-13, 19, 22, 26
trackball with tactile feedback using two orthogonal rollers
2. Claims: 4, 14, 25
trackball with polygonal rollers
3. Claims: 5-7, 15-17, 23
trackball with polygonal sphere
4. Claims: 8, 18, 24
trackball with movably biased rollers
5. Claims: 10, 20, 21
trackball with depression sensor



European Patent
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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	FR 2 667 705 A (CEGELEC) 10 April 1992 (1992-04-10)	21	
A	* the whole document *	8,10,18, 20,24	
A	EP 0 085 960 A (WICO CORP) 17 August 1983 (1983-08-17) * abstract; claims 1-9; figure 6 *	8,10,24	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 21 January 2002	Examiner Durand, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date C : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EP 00 30 6452

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21-01-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 10320115	A	04-12-1998	NONE	
WO 9729582	A	14-08-1997	AU 2267697 A WO 9729582 A1	28-08-1997 14-08-1997
JP 09282088	A	31-10-1997	NONE	
WO 9848548	A	29-10-1998	FI 971708 A AU 7046798 A EP 0985306 A2 WO 9848548 A2	23-10-1998 13-11-1998 15-03-2000 29-10-1998
WO 0159556	A	16-08-2001	JP 2001216085 A JP 2001255997 A JP 2001265528 A WO 0159556 A1	10-08-2001 21-09-2001 28-09-2001 16-08-2001
WO 9725657	A	17-07-1997	US 5889670 A AU 1567697 A CA 2242840 A1 EP 0876639 A1 JP 2000503153 T US 5889672 A WO 9725657 A1 US 6195592 B1	30-03-1999 01-08-1997 17-07-1997 11-11-1998 14-03-2000 30-03-1999 17-07-1997 27-02-2001
WO 9919861	A	22-04-1999	US 6157369 A AU 1071399 A CN 1239568 T WO 9919861 A1 US 2001020932 A1	05-12-2000 03-05-1999 22-12-1999 22-04-1999 13-09-2001
JP 11032113	A	02-02-1999	NONE	
DE 19722505	A	03-12-1998	DE 19722505 A1 WO 9854670 A1 EP 0983573 A1	03-12-1998 03-12-1998 08-03-2000
GB 2318944	A	06-05-1998	US 5841849 A CA 2216988 A1 JP 10190811 A	24-11-1998 30-04-1998 21-07-1998
FR 2667705	A	10-04-1992	FR 2667705 A1	10-04-1992
EP 0085960	A	17-08-1983	US 4404865 A AU 1128183 A	20-09-1983 18-08-1983

EPO FORM P455

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21-01-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0085960 A	CA	1192285 A1	20-08-1985
	EP	0085960 A1	17-08-1983
	JP	58149535 A	05-09-1983
	ZA	8300910 A	28-03-1984
